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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/025,903	12/26/2001	Kyo Ho Moon	8733.542.00	7621
30827 7590 05/01/2007 MCKENNA LONG & ALDRIDGE LLP 1900 K STREET, NW WASHINGTON, DC 20006			EXAMINER PARKER, JOHN M	
			ART UNIT 2823	PAPER NUMBER
			MAIL DATE 05/01/2007	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/025,903	Applicant(s) MOON, KYO HO	
	Examiner John M. Parker	Art Unit 2823	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 January 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5, 8-11 and 13-15 is/are rejected.
- 7) ☒ Claim(s) 6, 7 and 12 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Claim Rejections - 35 USC § 102

A person shall be entitled to a patent unless –

Claims 1-5,8-11 and 13-15 are rejected under 35 U.S.C. 102(b) as being

This cross-sectional view shows a semiconductor device with a trench structure. The device includes a substrate (2) with a layer (32) and a top layer (38). A trench (15) is formed in the substrate, with a bottom surface (15a) and a top surface (15b). The trench is filled with a material (16). A gate structure (14) is formed on the left side of the trench, and a gate structure (17) is formed on the right side. The gate structures are made of a material (5) and have a top surface (50). The trench is filled with a material (27) and has a bottom surface (25). The trench is also filled with a material (22). The trench is filled with a material (34) and has a bottom surface (36). The trench is filled with a material (40) and has a bottom surface (38).

Fig. 2

a thin film transistor having a gate electrode [12], a source electrode [14] and a drain electrode [16] provided on a substrate;

a first protective film covering the thin film transistor [38];

a first drain contact hole passing through the first protective film [50];

a second protective film provided on the first protective film [40];

a second drain contact hole passing through the second protective film centering around the drain contact hole [15b]; and

a transparent electrode connected to the drain electrode via the first and second drain contact holes [5, pg. 6, paragraph [0014] confirms it is indeed transparent], wherein the first protective film is spaced apart from the transparent electrode in the first drain contact hole [the first protective film is spaced apart from the transparent electrode by the layer 36].

Regarding claim 2, AAPA discloses the X-ray detecting device according to claim 1, wherein the second drain contact hole has a smaller width than the first drain contact hole [pg. 6, paragraph [0015], during the contact hole formation it is disclosed that 38 becomes undercut, thereby being wider than the second contact hole formation in the same sense as the instant inventions first contact hole is wider than the second contact hole].

Regarding claim 3, Fig. 2 of AAPA teaches the X-ray detecting device according to claim 1, further comprising: a ground line having the lower electrode of a storage capacitor on the substrate [22];

a first storage contact hole passing through the first protective film covering the ground line [52];

a second storage contact hole passing through the second protective film centering around the first storage contact hole [17];

and a storage electrode electrically connected to the ground line via the first and second storage contact holes [25].

Regarding claim 4, AAPA discloses the X-ray detecting device according to claim 3, wherein the first protective film is made from an inorganic insulating material [pg. 6, paragraph [0015]].

Regarding claim 5, AAPA teaches the X-ray detecting device according to claim 3, wherein the second protective film is made from an organic insulating material [pg. 6, paragraph [0015]].

Regarding claim 8, AAPA discloses the X-ray detecting device according to claim 3, wherein the second storage contact hole has a smaller width than the first storage contact hole [pg. 6, paragraph [0015], during the contact hole formation it is disclosed that 38 becomes undercut, thereby being wider than the second contact hole formation in the same sense as the instant inventions first contact hole is wider than the second contact hole].

Regarding claim 9, Fig. 2 of AAPA teaches a method of fabricating an X-ray detecting device, comprising the steps of:

- providing a gate electrode on a substrate [12];

- providing a gate insulating film on the substrate [32];

- providing a semiconductor layer on the gate insulating film [34];

- providing a source electrode [14] and a drain electrode [16] on the gate insulating film;

- providing a first protective film on the gate insulating film [38];

providing a first drain contact hole passing through the first protective film [50];

providing a second protective film on the first protective film [40];

providing a second drain contact hole passing through the second protective film centering around the first drain contact hole [15b]; and

providing a transparent electrode on the second protective film [5, pg. 6, paragraph [0014] confirms it is indeed transparent], wherein the first protective film is spaced apart from the transparent electrode in the first drain contact hole [the first protective film is spaced apart from the transparent electrode by the layer 36].

Regarding claim 10, AAPA discloses the method according to claim 9, wherein the first drain contact hole has a larger width than the second drain contact hole [pg. 6, paragraph [0015], during the contact hole formation it is disclosed that 38 becomes undercut, thereby being wider than the second contact hole formation in the same sense as the instant inventions first contact hole is wider than the second contact hole].

Regarding claim 11, AAPA teaches the method according to claim 9, further comprising the steps of:

forming a ground line simultaneously with the source and drain electrodes [pg. 5, paragraph [0011]];

forming a first storage contact hole passing through the first protective film covering the ground line [fig. 2, 52];

forming a second storage contact hole passing through the second protective film centering around the first storage contact hole [fig. 2, 17]; and

forming a transparent electrode on the second protective film [fig. 2, 25, pg. 5, paragraph [0012] confirms it is indeed transparent].

Regarding claim 13, AAPA teaches the method according to claim 11, wherein the first storage contact hole has a larger width than the second storage contact hole [pg. 6, paragraph [0015], during the contact hole formation it is disclosed that 38 becomes undercut, thereby being wider than the second contact hole formation in the same sense as the instant inventions first contact hole is wider than the second contact hole].

Regarding claim 14, AAPA discloses the method according to claim 11, wherein the first protective film is made from an inorganic insulating material [pg. 6, paragraph [0015]].

Regarding claim 15, AAPA teaches the method according to claim 11, wherein the second protective film is made from an organic insulating material [pg. 6, paragraph [0015]].

Response to Arguments

Applicant's arguments filed 30 January 2007 have been fully considered but they are not persuasive. Applicant argues that the prior art fails to anticipate the claim as amended. However, this is not persuasive as the pixel electrode disclosed by AAPA is considered a transparent electrode and is indeed spaced apart from the first protective film in the first drain contact hole.

Allowable Subject Matter

Claims 6,7 and 12 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter:

Regarding claims 6,7, and 12 the prior art teaches a transparent electrode spaced apart from the first protective film as claimed, however, the transparent electrode is in fact the pixel electrode. The prior art fails to teach the use of an intermediate transparent electrode which is spaced apart from the first protective film in the first drain contact hole.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to John M. Parker whose telephone number is 571-272-8794. The examiner can normally be reached on Monday - Friday 8am - 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew S. Smith can be reached on 571-272-1907. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



John M. Parker



GEORGE R. FOURSON
PRIMARY EXAMINER